Computational Design and Testing

U N I V E R S I T Y O F U T A H

CENTER

The Center for Computational Design and Testing (CCDT) is focused on the commercialization of computational engines that facilitate and accelerate the design and testing of novel materials and devices, particularly those in semiconductors and nanotechnology.

TECHNOLOGY

The CCDT's core technology includes two computational engines: the Materials Designer (MaDes) and Device Simulator (DeSim). MaDes predicts the structural and mechanical properties of new materials based on first principles analysis (without assumptions) at the level of atomic forces, while DeSim models the electrical properties and performance of components constructed with novel materials.

New materials are typically designed and tested in a laboratory, costing up to a million dollars and taking years to develop. Computational design and testing significantly reduces the costs and time, permitting design and testing with a few thousand dollars and a couple of months. The need for this technology is increasing as devices are miniaturized and new materials invented.

ACCOMPLISHMENTS

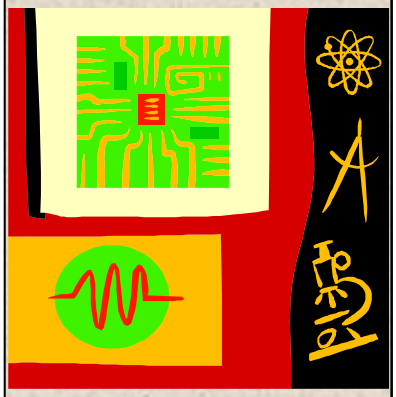
In its third and final year of funding, the CCDT continues to finalize the development of its two computational engines and was awarded $30,000 from a Utah company to characterize properties of a silicon wafer using MaDes. The CCDT's other technology, DeSim, also has many applications in the electronics industry, such as in nano-electro-mechanical systems (NEMSs).

The Center has also developed several web-based computational applications for prediction of crystal properties and simulating the growth of a thin film.

THINK TANK

What if there was...

A way to determine the properties of a new component, such as a semiconductor, before it is even built?



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